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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,448	04/07/2006	Atsushi Matsumoto	L9289.06117	3354

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EXAMINER	
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ART UNIT	PAPER NUMBER
4145	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,448	MATSUMOTO ET AL.	
	Examiner	Art Unit	
	THUAN NGUYEN	4145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/15/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quigley (US 2001/0055319A1) in view of admitted prior art included in the application, and Sommer (US 2004/0228391A1).

3. As per claim 1, Quigley teaches *a modulator that modulates transmission data* (Quigley, figure 5B, element 270) *using a first modulation scheme to obtain first modulated data* (Quigley, paragraph [0313], line 3) *and modulates the transmission data using a second modulation scheme* (Quigley, paragraph [0313], line 6) *of a higher M-ary number than said first modulation scheme to obtain second modulated data* (Quigley, paragraph [0313], lines 9-10 teaches that one modulation method utilizes a larger constellation size to achieve higher data rate, which is the same thing as a higher M-ary number.)

Quigley, paragraph [0314] also teaches dividing the transmission spectrum into a plurality of channels, which is equivalent to a plurality of subcarriers. Since Quigley, paragraph [0313] teaches two modulation schemes, it follows that Quigley also teaches two groups of subcarriers each belonging to a modulation scheme, i.e. *a plurality of first subcarriers* and *a plurality of second subcarriers*.

Quigley does not teach *a radio transmission apparatus that transmits a radio signal consisting of a plurality of subcarriers… a mapping unit that maps said first chips on a plurality of first subcarriers mapped in a frequency domain and maps said second chips on a plurality of second subcarriers mapped in a time domain and spreading said first modulated data to obtain a plurality of first chips and spreading said second modulated data to obtain a plurality of second chips.*

However admitted prior art included in the application teaches *a radio transmission apparatus that transmits a radio signal* (Specification, paragraph [0002], line 4 teaches a CDMA and OFDM system, i.e. a radio transmission system that transmit a radio signal) *consisting of a plurality of subcarriers … a mapping unit that maps said first chips on a plurality of first subcarriers mapped in a frequency domain and maps said second chips on a plurality of second subcarriers mapped in a time domain* (Specification, paragraph [0002], lines 5-8 teaches of subcarriers and chips being mapped on subcarriers in a frequency domain and chips being mapped on subcarriers in a time domain.)

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement *a radio transmission apparatus that transmits a radio signal consisting of a plurality of subcarriers… a mapping unit that maps said first chips on a plurality of first subcarriers mapped in a frequency domain and maps said second chips on a plurality of second subcarriers mapped in a time domain* of the admitted prior art into Quigley, since Quigley suggests two modulation schemes to be used on a plurality of subcarriers (something broad) in general, and the admitted prior art suggests the beneficial use of applying the same scheme in a system of CDMA and OFDM combined such as to transmit data more efficiently in the analogous art of telecommunications.

Quigley and the admitted prior art do not teach *a spreader that spreads said first modulated data to obtain a plurality of first chips and spreads said second modulated data to obtain a plurality of second chips*. However Sommer teaches *a spreader that spreads said first modulated data to obtain a plurality of first chips and spreads said second modulated data to obtain a plurality of second chips* (Sommer, figure 1 shows a spreader that spreads symbols, i.e. modulated data, to obtain a plurality of chips.) Thus it would have been obvious to one of ordinary skill in the art to implement *a spreader that spreads said first modulated data to obtain a plurality of first chips and spreads said second modulated data to obtain a plurality of second chips* of Sommer into Quigley and the admitted prior art, since Quigley and the admitted prior art suggest two sets of modulated data in CDMA system (something broad) in general, and Sommer suggests

the beneficial use of spreaders to spread the two sets of data into chips such as to complete the spread-spectrum techniques which are at the core of a CDMA system in the analogous art of telecommunications.

4. As per claim 2, Quigley, the admitted prior art and Sommer teach claim 1. Quigley, the admitted prior art and Sommer also teach *said mapping unit maps said first chips on both said first subcarriers and said second subcarriers* (In claim 1, the first chips are the chips that belong to the first modulation scheme, which corresponds to a lower data rate. Quigley, paragraph [0313], lines 9-12 teaches that the modulation scheme with higher data rate is used only when a channel has sufficiently good quality. It follows that the chips that correspond to a lower data rate can be mapped on all channels, i.e. all subcarriers including the first subcarriers and the second subcarriers.)

5. As per claim 3, Quigley, the admitted prior art and Sommer teach claim 1. Quigley and the admitted prior art also teach *mapping unit uses subcarriers having propagation channel quality lower than a predetermined level as said first subcarriers* (Quigley, paragraph [0313], lines 7-8. Note that the “first modulation” in Quigley is the higher data rate one and corresponds to the “second modulation” recited in the claims, and vice versa. The admitted prior art teaches mapping using subcarriers in paragraph [0002]).

6. As per claim 4, Quigley, the admitted prior art and Sommer teach claim 1. Quigley and the admitted prior art also teach *mapping unit uses subcarriers having propagation channel quality equal to or higher than a predetermined level as said second subcarriers* (Quigley, paragraph [0313], lines 3-6. Note that the "first modulation" in Quigley is the higher data rate one and corresponds to the "second modulation" recited in the claims, and vice versa. The admitted prior art teaches mapping using subcarriers in paragraph [0002]).

7. As per claim 5, Quigley, the admitted prior art and Sommer teach claim 1. Sommer teaches a *radio reception apparatus that received said radio signal transmitted from the radio transmission apparatus* (Sommer, figure 2). Sommer and Quigley also teach *a despreader that despreads said first chips to obtain said first modulated data and despreads said second chips to obtain said second modulated data* (Sommer, figure 2 shows a spreader that despreads chips to obtain a plurality of symbols, i.e. demodulated data. Quigley, paragraph [0313] teaches the first and second modulation schemes), and *a demodulator that demodulates said first modulated data using said first modulation scheme and demodulates said second modulated data using said second modulation scheme* (Sommer, figure 2 shows a demodulator to demodulate modulated data. Quigley, paragraph [0313] teaches the first and second modulation schemes.)

8. As per claim 6, Quigley teaches *modulating transmission data* (Quigley, figure 5B, element 270) *using a first modulation scheme to obtain first modulated data* (Quigley, paragraph [0313], line 3) *and modulating the transmission data using a second modulation scheme* (Quigley, paragraph [0313], line 6) *of a higher M-ary number than said first modulation scheme to obtain second modulated data* (Quigley, paragraph [0313], lines 9-10 teaches that one modulation method utilizes a larger constellation size to achieve higher data rate, which is the same thing as a higher M-ary number.)

Quigley, paragraph [0314] also teaches dividing the transmission spectrum into a plurality of channels, which is equivalent to a plurality of subcarriers. Since Quigley, paragraph [0313] teaches two modulation schemes, it follows that Quigley also teaches two groups of subcarriers each belonging to a modulation scheme, i.e. *a plurality of first subcarriers* and *a plurality of second subcarriers*.

Quigley does not teach *a radio transmission method for transmitting a radio signal consisting of a plurality of subcarriers… mapping said first chips on a plurality of first subcarriers mapped in a frequency domain and mapping said second chips on a plurality of second subcarriers mapped in a time domain and spreading said first modulated data to obtain a plurality of first chips and spreading said second modulated data to obtain a plurality of second chips*.

However admitted prior art included in the application teaches *a radio transmission method that transmits a radio signal* (Specification, paragraph [0002], line 4 teaches a CDMA and OFDM system, i.e. a radio transmission system that transmit a radio signal) *consisting of a plurality of subcarriers … mapping said first chips on a plurality of first subcarriers mapped in a frequency domain and mapping said second chips on a plurality of second subcarriers mapped in a time domain* (Specification, paragraph [0002], lines 5-8 teaches of subcarriers and chips being mapped on subcarriers in a frequency domain and chips being mapped on subcarriers in a time domain.)

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement *a radio transmission method for transmitting a radio signal consisting of a plurality of subcarriers… mapping said first chips on a plurality of first subcarriers mapped in a frequency domain and mapping said second chips on a plurality of second subcarriers mapped in a time domain* of the admitted prior art into Quigley, since Quigley suggests two modulation schemes to be used on a plurality of subcarriers (something broad) in general, and the admitted prior art suggests the beneficial use of applying the same scheme in a system of CDMA and OFDM combined such as to transmit data more efficiently in the analogous art of telecommunications.

Quigley and the admitted prior art do not teach *spreading said first modulated data to obtain a plurality of first chips and spreading said second modulated data to obtain a*

plurality of second chips. However Sommer teaches *spreading said first modulated data to obtain a plurality of first chips and spreading said second modulated data to obtain a plurality of second chips* (Sommer, figure 1 shows a spreader that spreads symbols, i.e. modulated data, to obtain a plurality of chips.) Thus it would have been obvious to one of ordinary skill in the art to implement *spreading said first modulated data to obtain a plurality of first chips and spreading said second modulated data to obtain a plurality of second chips* of Sommer into Quigley and the admitted prior art, since Quigley and the admitted prior art suggest two sets of modulated data in CDMA system (something broad) in general, and Sommer suggests the beneficial use of spreaders to spread the two sets of data into chips such as to complete the spread-spectrum techniques which are at the core of a CDMA system in the analogous art of telecommunications.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUAN NGUYEN whose telephone number is (571)270-7189. The examiner can normally be reached on 7:30 AM to 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on 571-272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T.N.

/ROBERT WILSON/
Primary Examiner, Art Unit 2619